

N° 20,898



A.D. 1906

Date of Application, 20th Sept., 1906

Complete Specification Left, 20th Mar., 1907—Accepted, 12th Sept., 1907

PROVISIONAL SPECIFICATION.

**"Improvements in and connected with the Manufacture of Metal Drums for Containing Cement and other Materials"**.

I, **MATHIAS JOSEF HEIL**, of Styrum, Germany, Manufacturer, do hereby declare the nature of this invention to be as follows:—

This invention relates to iron and other metal drums or casks for containing cement and other materials, the object being to produce in a very simple manner a metallic drum which is air and water tight and is capable of remaining in that state for a long period, such as is required for the export of cement and other substances which would be deteriorated by the ingress of water or air during transport.

The invention consists in attaching the ends to the cylindrical body of a metallic drum by bending or beading over the edges of the ends so that they clamp on the edges of the body, and then in rolling the clamped joints so formed so as to harden and impart increased strength thereto.

The invention also consists in interposing packing in the joints so as to ensure an air tight and water tight closure.

In carrying out the invention according to one mode, a drum is formed from a cylindrical iron body, and two circular ends, the circumferential edges of the latter being formed into U-shaped cross section, so as to fit or clamp on the edges of the drum body. The edges of the body and of the ends when in this position, are then subjected to a rolling process, whereby an air tight and water tight joint is effected and the metal is so worked upon in the rolling process, that the confined edges are hardened and their strength and rigidity greatly increased. The end which is to form the bottom of the drum may be further secured by riveting if desired, as also may the upper end; in the latter case, however, the joint is so formed, that when the rivets are cut, the end or ends may be removed without cutting the material of the drum.

When thin plates are used, it is desirable to strengthen the edges by inserting a reinforcing ring, so as to impart to the end of the drum the necessary rigidity and strength to withstand the rough usage that it is liable to receive during transport by water.

To further ensure an air and water tight joint, especially between the bottom end and the body, suitable caulking material or packing, such as tar, hemp, or the like, may be inserted in the U-shaped edges before the jointing is completed.

Since it is not necessary to remove the bottom end of the drum when empty, the drum may be used again for the export of liquids or for any other suitable purpose.

It is to be understood that the invention is not confined to any special material, although iron is preferred, nor is it confined to any special method of bending over the edges of the end, as the latter may be effected by hammering or by machine tools, or in any other convenient manner.

Dated this 20th day of September, 1906.

**MARKS & CLERK,**

18, Southampton Buildings, London, W.C.

13, Temple Street, Birmingham, and 30, Cross Street, Manchester.

Agents.

[Price 8d.]



*Improvements in the Manufacture of Metal Drums for Containing Cement, &c.*

COMPLETE SPECIFICATION.

**"Improvements in and connected with the Manufacture of Metal Drums for Containing Cement and other Materials."**

I, **MATHIAS JOSEF HEIL**, of Styrum, Germany, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to iron and other metal drums or casks for containing cement and other materials, the object being to produce in a very simple manner a metallic drum which is air and water tight and is capable of remaining in that state for a long period, such as is required for the export of cement and other substances which would be deteriorated by the ingress of water or air during transport.

In plain ended vessels as heretofore employed it has been found necessary when removing the U-edged end covers to detach a portion of the body or to make the ends with weakened or thin jointing surfaces so that the cover can be readily ruptured or cut; by my present invention injury to the vessel or lid is obviated.

The present invention consists in a metal barrel or drum for containing cement or for like purposes having a plain edged body and covers or lids formed with U-shaped edges adapted to clamp on to the edges of the body and to be secured thereto in such a manner that they may be removed without damage to themselves or the drum.

The invention also consists in subjecting the U-shaped edges to a rolling process when in position on the body.

The accompanying drawings represent sections of two forms of barrel or drum according to the invention.

In carrying out the invention according to one mode, a drum is formed from a cylindrical iron body, *a*, and two circular ends, *b*, the circumferential edges of the latter being formed into U-shaped cross section, preferably by a machine so as to fit or clamp on the edges of the drum body. The edges of the body and of the ends when in this position, are then subjected to a rolling process, whereby an air tight and water tight joint is effected and the metal is so worked upon in the rolling process, that the confined edges are hardened and their strength and rigidity greatly increased. The end, *b*, which is to form the bottom of the drum may be secured by riveting if desired, as also may the upper end; in the latter case, however, the joint is so formed, that when the rivets are cut, the end or ends may be removed without cutting the material of the drum.

When thin plates are used, it is desirable to strengthen the edges by reinforcing rings, *d*, which may be separate or formed by bending over the edges of the drum, so as to impart to the end of the drum the necessary rigidity and strength to withstand the rough usage that it is liable to receive during transport by water.

To further ensure an air and water tight joint, especially between the bottom end, *b*, and the body, *a*, suitable caulking material or packing, such as tar, hemp, or the like, may be inserted in the U-shaped edges, *c*, before the jointing is completed.

Since it is not necessary to remove the bottom end, *b*, of the drum when empty, the drum may be used again for the export of liquids or for any other suitable purpose.

It is to be understood that the invention is not confined to any special material, although iron is preferred, nor is it confined to any special method

*Improvements in the Manufacture of Metal Drums for Containing Cement, &c.*

of bending over the edges, *c*, of the ends, *b*, as the latter may be effected by hammering or by machine tools, or in any other convenient manner although machine operation is preferred as it tends to harden the material.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. In a metal barrel or drum comprising a plain edged body (*a*) and covers or lids (*b*) formed with U-shaped edges which clamp on to the edges of the body, adapting the covers or lids to be secured in such a manner that they may  
10 be removed without damage to themselves or the drum.
2. A metal barrel or drum as claimed in Claim 1 for containing cement or for like purposes comprising a plain edged body and covers or lids having U-shaped edges for engagement with the edges of the body, said U-shaped edges being  
15 subjected to a rolling process when in position on the body, substantially as and for the purpose described.
3. The metal barrel or drum as hereinbefore described and as illustrated.

Dated this 19th day of March, 1907.

MARKS & CLERK,

18, Southampton Buildings, London, W.C.

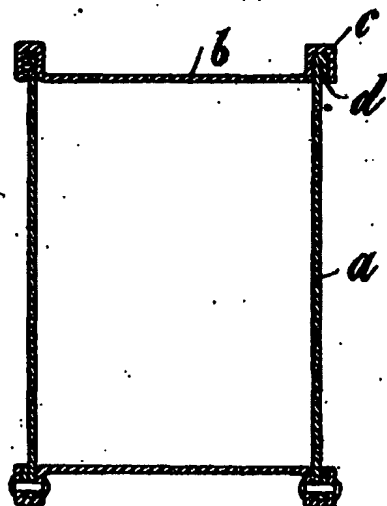
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Agents.

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*Fig. 1.*



*Fig. 2.*



BIRMINGHAM  
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[This Drawing is a reproduction of the Original on a reduced scale.]



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**RECEIVED WITH THANKS**

ON 29. Mai 2007

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Application No. 04 000 232.1 - 2314	Ref. L9369-EP	Date 25.05.2007
Applicant LG ELECTRONICS INC.		

**Communication pursuant to Article 96(2) EPC**

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).



Spitzer, Bettina  
Primary Examiner  
for the Examining Division

Enclosure(s): 3 page/s reasons (Form 2906)

Registered Letter

EPO Form 2001

수신시간 6월 1일 3:37PM



Bescheid/Protokoll (Anlage)

Communication/Minutes (Annex)

Notification/Procès-verbal (Annexe)

Datum  
Date 25.05.2007Blatt  
Sheet 1  
FeuilleAnmelde-Nr.:  
Application No.: 04 000 232.1  
Demande n°:

The examination is carried out on the application documents as originally filed.

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 5950472  
D2: GB 136510  
D3: GB 283673  
D4: US 2002/0189070  
D5: GB 1059002  
D6: FR 2667521  
D7: GB 399132  
D8: GB 20898  
D9: WO 9427280

1. Art. 84 EPC

- 1.1 Claims 6 and 12 have been drafted as separate independent claims. However, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection. Hence, claims said do not meet the requirements of Article 84 EPC in combination with Rule 29(2) EPC.

The applicant is requested to file an amended set of claims which complies with Art. 84 EPC and Rule 29(2). Particular embodiments of the invention have to be drafted in dependent claims (see also Rule 29(3) EPC). Failure to do so, or to submit convincing arguments as to why the current set of claims does in fact comply with these provisions, will lead to refusal of the application under Article 97(1) EPC.

- 1.2 Claim 6 is unclear as it is not clear what is the up and down direction.

2. Claim 1

Document D1, which is considered to represent the most relevant state of the art,



Bescheid/Protokoll (Anlage)

Communication/Minutes (Annex)

Notification/Procès-verbal (Annexe)

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Sheet  
Feuille

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Anmelde-Nr.:  
Application No.: 04 000 232.1  
Demande n°:

discloses a method of manufacturing a drum (c. 1, l. 6) from which the subject-matter of claim 1 differs in that there are the process steps forming a cylindrical drum and bending both edges of the drum.

The problem to be solved by the present invention may therefore be regarded as to implement drum processing steps.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Articles 52(1) and 56 EPC) for the following reasons:

Forming a drum and bending the edges of drum are generally known in the art. said features are e.g. described in documents D2, D3, D4, D5, D7, D8, D9 as providing the same advantages as in the present application. The skilled person would therefore regard it as a normal option to include these features in the method described in document D1 in order to solve the problem posed.

### 3. Claim 6

Document D1, which is considered to represent the most relevant state of the art, discloses an apparatus for manufacturing a drum (Fig. 4, 6; c. 1, l. 9) from which the subject-matter of claim 6 differs in that there are an upper, a middle and a lower cam instead of one cam (D1: Fig. 7: 100) and in that the upper outer die and the lower outer die are movable in up and down direction whereas in D1 the second roller (D1: Fig. 1: 140) is movable in a radial direction (D1: c. 4, l. 33).

The problem to be solved by the present invention may therefore be regarded as to find an alternative construction in order to produce a drum with reduced ends and beads.

The solution proposed in claim 6 of the present application cannot be considered as involving an inventive step (Articles 52(1) and 56 EPC) for the following reasons: said features (one or three cams; movable radially or axially) are merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

### 4. Dependent Claims 2 - 5, 7-11,13-16

- 4.1 Dependent claims 2-5, 7-11,13-16 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to inventive step, the reasons being as follows:



Bescheid/Protokoll (Anlage)

Communication/Minutes (Annex)

Notification/Procès-verbal (Annexe)

Datum  
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Sheet 3  
FeuilleAnmelde-Nr.:  
Application No.: 04 000 232.1  
Demande n°:

- 4.2 The additional features of claim 2 are known from D2 (p. 1, l. 5-9).
  - 4.3 The additional features of claim 3 are known from D7 (p. 1, l. 29-30).
  - 4.4 The additional features of claim 4 are known from D1 (c. 2, l. 30-54).
  - 4.5 The additional features of claims 5, 7, 14 are known from D1 (Fig. 6; c. 3, l. 65-c. 4, l. 5).
  - 4.6 The additional features of claim 8 are known from D1 (Fig. 7: 100, , 94).
  - 4.7 The additional features of claims 9, 10 are known from D1 (Fig. 6: 140; c. 4, l. 32-39).
  - 4.8 The additional features of claims 11, 13, 15 are a normal design procedure.
  - 4.9 The additional features of claim 14 are known from D1 (Fig. 6: 56, 58, 64, 66, 68; c. 3, l. 15-25).
  - 4.10 The additional features of claim 16 are known from D1 (Fig. 7: 100, 94).
5. To meet the requirements of Rule 27(1)(b) EPC, the document D1 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.
  6. Independent claims 1 and 6 are not in the two-part form in accordance with Rule 29(1) EPC, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 29(1)(a) EPC) and with the remaining features being included in the characterising part (Rule 29(1)(b) EPC).
  7. It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 29(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.

Bettina Spitzer.